

but though I approached within ten feet it did not fly. After eyeing me curiously for a few minutes it went on hunting for food again.

On October 1, 1925, while walking over a blue grass pasture, I came to a ditch or washout ten feet or more in depth. Chunks of sod had slid down the sides of this ditch more or less of the way so as to give it a terraced appearance. In crossing this ditch I was stepping and hopping from one of these sod patches to the other when suddenly one of the little Black Rails flew from under my very feet. It dropped down again just as suddenly about fifteen feet from me and attempted to hide about one of those grass patches. I approached cautiously to get a good view, but since it met with little success in hiding, it soon flew out of the ditch and disappeared.

SIGOURNEY, IOWA.

AUXILIARY GUN BARRELS FOR COLLECTING BIRD SPECIMENS

BY W. G. F.

As time elapses and the older generation of ornithologists and collectors of bird specimens pass on, or become inactive, it happens that many of the younger men taking their places in the ranks of bird students are but little acquainted with the art of preparing scientific skins or the proper equipment for shooting the birds.

The writer in his later years having recognized the importance of, occasionally at least, collecting and preserving specimens of birds has experimented with a variety of gun calibers, different barrel lengths and especially, various types of small caliber auxiliary barrels. Therefore in the present paper it is proposed to describe and discuss some simple and easily made types of auxiliary barrels suited for use in 12-16-20-, or even smaller, gage shot guns, together with suitable ammunition therefor.

By the use of such small caliber barrels or bushings temporarily inserted in the chambers of ordinary shot guns, small birds may be collected at distances of twenty to sixty feet without mutilation. Less noise is made and particularly the bulk, weight, and cost of the ammunition are less. Lessened weight and bulk are important when one goes into the field prepared to shoot anything from hummers to eagles! The writer believes in "preparedness" although he never has shot either a hummer or an eagle.

After experimenting with guns shooting shot shells, from smooth bore .22s and .32s to a 12-gage long range gun chambering 3 inch shells I recommend for ordinary collecting purposes, a 16-gage, 28 inch or

30 inch double-barrel shot gun (left barrel full choke) fitted with 410 bushing for each barrel. But I still carry with me on extended collecting trips the 12-gage, long range gun for occasional use.

With those who prefer the 20-gauge double gun and can shoot closely enough to warrant its use for wing shots I have no argument. I do not favor a 410 double gun for general use, but it has its place in the jungle for small birds.

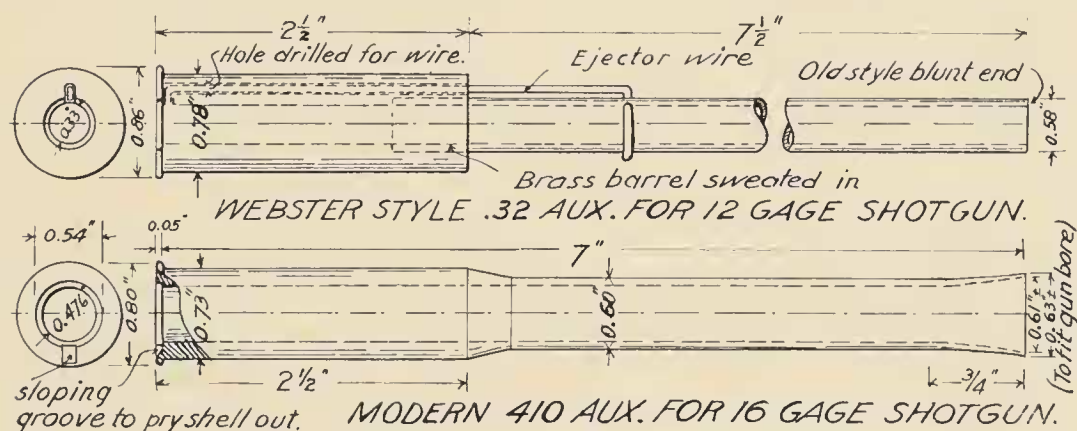
The Harrington and Richardson Arms Company, of Worcester, Mass., make a serviceable smooth bore, single shot 410 pistol in both 8 inch and $12\frac{1}{4}$ inch barrels. The latter makes much the better pattern and less noise. Such a gun is useful sometimes as a hand collecting gun when a double-barreled gun would not be carried. The $12\frac{1}{4}$ inch gun will get the smaller birds up to forty feet or so. This gun is $17\frac{1}{2}$ inches over all and weighs 2 lbs. 10 oz. If it tends to shoot over, due to recoil with the heavier loads, use both hands.

The auxiliary barrels or bushings used in 12-, or 16-gage shot guns by our earlier collectors were mostly .32 caliber, using reloadable brass shells. This caliber is fine for small birds at distances of fifteen to perhaps thirty feet. It permits shooting from a shorter distance than with the 410. The 410 (12 mm.) shot shell used in a short auxiliary barrel is suitable for distances of twenty to forty-five feet using shells 2 inches long, or up to about sixty feet using shells $2\frac{1}{2}$ inches long. A 410 gun will chamber .44 caliber ammunition. The diameter of the 410 shells is about .466 inch, and of the .44 caliber, about .463 inch.

For hummingbirds dust shot is suitable, but for warblers, small sparrows, and others within this size limit the best shot is No. 12 chilled. The great number of pellets in a load of dust shot is likely to riddle a bird and cause too great a loss of feathers. For the larger sparrows use No. 10 shot; for blackbirds and grackles use No. 9 shot. In general, use as small a load of as fine shot as will reach the bird and at the same time give a pattern dense enough to put several pellets into the bird.

The 410 loaded paper shot shells now are carried in stock in most ammunition stores, but usually nothing smaller than No. $7\frac{1}{2}$ shot, although No. 9 is a standard catalog load. Until this year No. 10 was a cataloged load. Numbers 10 and 12 shot will be loaded on special order, in lots of 500 shells. The 410 No. $7\frac{1}{2}$ is very useful for dispatching wounded hawks and other large birds and for shooting large birds close by, as often must be done in dense bush or jungle.

The loading of one's own 410 ammunition is a simple matter, requiring no special equipment except such as easily can be made at home in two hours time. Usually it is best to purchase the unloaded paper shells already primed. After some experimenting with black powder, which still is the choice of some old collectors, I favor a good grade of smokeless, as the grains are finer and more uniform in size—both important items in small loads. I follow the old rule of equal bulk of powder and shot, as this gives a better short distance collecting load. Too high velocity is more likely to injure the specimen. Place a cardboard wad on top of the powder also one felt wad in the 2 inch shells and two felts in the 2½ inch shells. Do not ram hard enough to distort the shells; however, if the shells are a bit swelled after loading, a bit of rolling between two hard smooth surfaces will remedy this. The closing or crimping may be done easily and neatly without



a special tool by twirling the loaded shell, open end down on a piece of polished hard wood or metal; starting with the shell axis at an angle of 45° with the surface and ending vertically. This is very quickly done. Leave one-eighth inch or a little more above the top cardboard wad for this crimping. It is well to have different colored cartridges for different loads or to mark shot size plainly with ink on side of shell, as the above described method of closing prevents marking shot size on the top wad.

Having described the advantages of the small caliber bushing and discussed the ammunition for it, we now come to the article itself.

As commonly made for either .32 caliber or 410 sizes, for use with modern so-called slow or progressive burning powder, the auxiliary barrel should be as long as one feels he can conveniently carry in his pocket. For practical purposes, 10 inches is long enough, while 7 inches or 8 inches will be less troublesome to carry. In the shorter lengths especially, when using modern powders, there results some incompletely burned gases in the barrel of the gun at the muzzle of the

auxiliary, which gases cause corrosion of the gun barrel. The priming cap now in use with the smokeless powders also causes corrosion. The corrosion is mostly within two or three inches from the muzzle of the aux. This corrosion may be much reduced by using an 8 inch or 9 inch aux having a bell-mouth in the last three-quarters inch as shown in the drawing. Such a bell-mouth fitted rather closely to the bore of the gun prevents an eddy of unburned gases as will occur with a blunt ended aux smaller than the gun bore. No doubt the use of this bell-mouth improves the pattern. Its use was suggested by the writer's experience in hydraulics.

The material of the aux should preferably be brass, as corrosion is then negligible. The clearance of the aux in the gun barrel should be sufficient for it to slip in and out easily and the same is true of its bore, so that no ejector will be needed for the small shells.

At the breech of the 410 aux shown, there is indicated a square section slanting groove, in which to use a knife point or some other narrow tool to pry out a shell that tends to stick. Some aux users carry a little rammer to drive out any troublesome shell. Once in a long time I have had to cut such a rammer from a bush.

Some of the .32 caliber auxiliaries were provided with a wire ejector placed in a hole drilled longitudinally through the side wall of the rear enlarged part of the aux. There is hardly enough thickness of side wall of a 410 aux even for 12-gage gun to safely permit such an ejector, but it is not needed if the bore is made sufficient. The cost recently, of such auxiliary barrels of brass 7 inches long made to order one at a time in a jobbing machine shop has been \$5.25 each.

The advantage of having two auxiliary barrels is just the same as that of a double-barreled gun over a single. Commonly I carry a 16-gage hawk load in the left (choked) barrel and one aux in the right barrel, with the second aux with a different load in coat pocket, ready to change into either barrel. A narrow pocket sewed on the inside of the coat is a handy way to carry the aux. When a short bell-mouthed aux is carried loosely in a side pocket with small shells it sometimes picks up a reversed shell in the bell-mouth. While such a loose plug might not split a barrel, I prefer not to experiment with it.

As the bore of shot guns of same gage varies so greatly at different distances forward of the shell chamber, it is best to take the gun barrel to the shop where the aux is to be made. The bore of the choked barrel of a gun is commonly larger than the cylinder barrel at a distance of 7 inches or 8 inches from the breech.

JACKSON, MICH.